

James Bethel Gresham Memorial Bridge
(KY Route 81 Bridge)
Kentucky Route 81 spanning the Green River
Calhoun
McLean County
Kentucky

HAER No. KY-30

HAER
KY
75-CALH,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Southeast Region
Department of the Interior
Atlanta, Georgia

HISTORIC AMERICAN ENGINEERING RECORD

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KY
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(KY ROUTE 81 BRIDGE)**

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Location: Kentucky Route 81 spanning the Green River
Connecting the communities of Calhoun and Rumsey
McLean County, Kentucky

U.S.G.S. 7.5 minute Calhoun, Kentucky quadrangle,
Universal Transverse Mercator coordinates
16.476985.4155251

Date of Construction: 1928. Altered 1975.

Engineer: Harrington, Howard and Ash, Consulting Engineers;
George Pike, Resident Engineer

Builder: Nashville Bridge Company

Present Owner: Kentucky Transportation Cabinet
Department of Highways
Old State Office Building
Frankfort, Kentucky 40601

Present Use: Vehicular Bridge
To be demolished in 1999

Significance: The James Bethel Gresham Memorial Bridge is significant as the only surviving structure built by the Nashville Bridge Company in Kentucky. The bridge was determined eligible for the National Register of Historic Places as part of a bridge reevaluation in 1988.

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STATEMENT OF SIGNIFICANCE

The James Bethel Gresham Memorial Bridge is a five span, steel truss bridge consisting of a main Pennsylvania Petit, through truss, two Pratts deck trusses, and two concrete and steel approach spans, that cross the Green River in the western part of Kentucky. Erected in 1928 by the Nashville Bridge Company, it is the only extant bridge documented in Kentucky constructed by this company. The structure is located between the city of Calhoun, the McLean County seat on the north, and Rumsey, a tiny, rural community on the south; and the setting for this early twentieth century bridge has changed very little since its construction date. This truss bridge was determined eligible for the National Register of Historic Places in 1988 as part of a reevaluation of A Survey of Truss, Suspension, and Arch Bridges in Kentucky, completed by Gregory Rawlings of the Kentucky Department of Transportation, Division of Environmental Analysis in 1982.

DESCRIPTION AND HISTORY

A Kentucky Historical Society marker on the south end of the bridge relates the following historical information: Corporal James Bethel Gresham Memorial Bridge. Erected in 1928, honoring the first American killed in action in World War I on November 3, 1917 at the Battle of Sommerviller. He enlisted in 1914 in Indiana, stationed with Pershing in Mexico, 1916. Sent overseas June 14, 1917, with the first American soldiers of AEF. Born McLean Co., August 23, 1893. Buried in France, re-interred, Evansville, Indiana in 1921.

The Corporal James Bethel Gresham Memorial Bridge, also known as the KY 81 Bridge, is one of two bridges in McLean County that span the Green River, a major waterway that bisects the county east to west. Crossing the river at Calhoun, the county seat, the bridge links the northern and southern parts of the county, and is extremely important to the transportation system and economy of the county and region.

Constructed on a north-south axis, the bridge is an extremely visible element in the community, having been constructed on tall foundation piers to prevent inundation from the frequent seasonal flooding in the Green River Valley. The structure is also located just upstream from Green River Lock and Dam number two, and thus required a high clearance for barges and boats moving through the lock system.

The 327 foot, center span of the Gresham bridge is a Pennsylvania Petit, Through Truss, a subtype of a Parker Truss, that has an arched top chord of more than five slopes. The Pennsylvania Petit Truss, a modification of the more popular Pratt Truss, was developed during the last part of the nineteenth century when railroad expansion forced the construction of structures that could carry

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the heavier locomotives. The bridge also displays the subdivided panels, and horizontal struts of a Camelback Truss. The Camelback Truss, another modification of a Pratt Truss, had an arched top chord of exactly five slopes.

The structural members of the KY 81 Bridge are all riveted steel. The top chord and inclined end posts are composed of two channels with cover plates and lacing bars. The bottom chord is a box consisting of two plates with two channels and lacing bars. The hip verticals and intermediate posts are two paired angles with lacing bars. The diagonals and counters are either two channels with lacing bars or two paired angles with stay bars. The top and bottom lateral bracing consists of angles with lacing and stay bars or just angles. The floor beams and stringers are both I-beams. The original steel, grid deck was filled with concrete in 1975.

Two 121 foot, Pratt, deck trusses service the Pennsylvania Petit as approach spans on each end. In addition, these trusses are supported by 479 feet of concrete approach supported by steel piers. The total length of the structure to 1048 feet and the bridge is 21 feet in width. Also composed of riveted steel members, the Pratt deck truss has a top chord that is composed of I-beams. The inclined end posts and intermediate posts are paired angles with lacing bars, and diagonals and counters are paired angles. The hip verticals are paired angles with lacing bars. The bottom chord and stringers are paired angles. The floor beams are I-beams. A guardrail system consists of upright paired angles with lacing bars. All three steel trusses are supported by poured concrete piers.

Prior to 1912 and the establishment of the Kentucky Department of Highways, individual communities or counties were responsible for local bridge crossings. Several factors were involved in the decision to contract a certain type of structure, including economics, span length, and load weight. Localities either contracted directly with the bridge companies advertising their services in catalogs, or worked with a bridge agent to arrange the construction. The standardized bridge parts were manufactured, and the bridge was initially assembled in the shop. The structure was then disassembled, shipped, and rebuilt on site. The emergence of the steel, truss during the last quarter of the nineteenth century, created dynamic growth in the bridge building industry. Prior to 1880, few individual bridge companies were in operation in the region; just nine years later, a total of 40 companies can be documented. The Survey of Truss, Suspension, and Arch Bridges in Kentucky, (Rawlings 1982) documented 35 bridge companies, that constructed 190 identifiable structures within the state. Although these firms represented nine states; the majority of Kentucky's bridges were built by Ohio companies. Only two companies from Tennessee the Luten Bridge Company and the Nashville Bridge Company were documented as having built any trusses built in Kentucky. The KY 81 Bridge at Calhoun is the only extant Nashville Bridge Company truss in the state.

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HISTORY OF THE NASHVILLE BRIDGE COMPANY

The following discussion is based upon documentation from Tennessee's unpublished historic bridge survey provided by Martha Carver, Cultural Historian with the Tennessee Department of Transportation.

The Nashville Bridge Company was established in 1902 by Arthur Dyer, a native of Chattanooga, Tennessee. Arthur Dyer was born in Massachusetts in 1868. His father, Charles Henry Dyer moved the family to Chattanooga in 1871. Arthur graduated from Chattanooga High School in 1887 and Vanderbilt Engineering School in Nashville in 1891. He was unable to attend the fifth year required to obtaining a Civil Engineering degree and did not officially receive it until 1945. Dyer worked for the Phoenix Iron Company in Pennsylvania after graduation until 1893. The following year he worked for the Light House Board in Washington and then in 1895 for the Milliken Brothers in New York. After losing his job and unable to find work, he returned home to Chattanooga and began bidding on small bridge projects. During this period he met H. T. Sinnott, the Nashville agent for the Youngstown Bridge Company, who offered Dyer a job. Although he worked mainly on Youngstown designs, he and Sinnott also freelanced and were listed in the 1897 and 1900 Nashville City Directories as "Sinnott and Dyer (A. J.) Civil Eng. And Contractors."

The Youngstown Bridge Company was purchased by the American Bridge Company in 1899-1900, and Dyer worked for them for a short period of time. After a short partnership with Sinnott, Dyer established the Nashville Bridge Company sometime around 1901. Major spring flooding in the region during the years 1901, 1902 and 1903 created a healthy market for bridge companies, and the 1902 and 1904 city directories listed the Nashville Bridge & Construction Company. Dyer reorganized the business around 1904 with two associates, W. T. Young, and Leslie M. Ross with a capital of \$15,000. Dyer served until 1940, when he became chairman of the board.

Initially the Nashville Bridge Company worked mostly in Tennessee on small crossings. The company expanded rapidly throughout the southeast constructing trusses over major waterways. Eventually the company shipped bridges to Central and South America, and opened a branch office in Columbia, thereby making the Nashville Bridge Company the most prolific of any bridge company in Tennessee. The company continues to operate to this day, although it was purchased out of the Dyer family in 1969.

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1998 Tennessee Historic Bridge Survey. Unpublished document compiled by the Tennessee Department of Highways.

Rawlings, Gregory D.

1982 A Survey of Truss, Suspension, and Arch Bridges in Kentucky. Division of Environmental Analysis, Kentucky Transportation Cabinet, Frankfort, Kentucky.